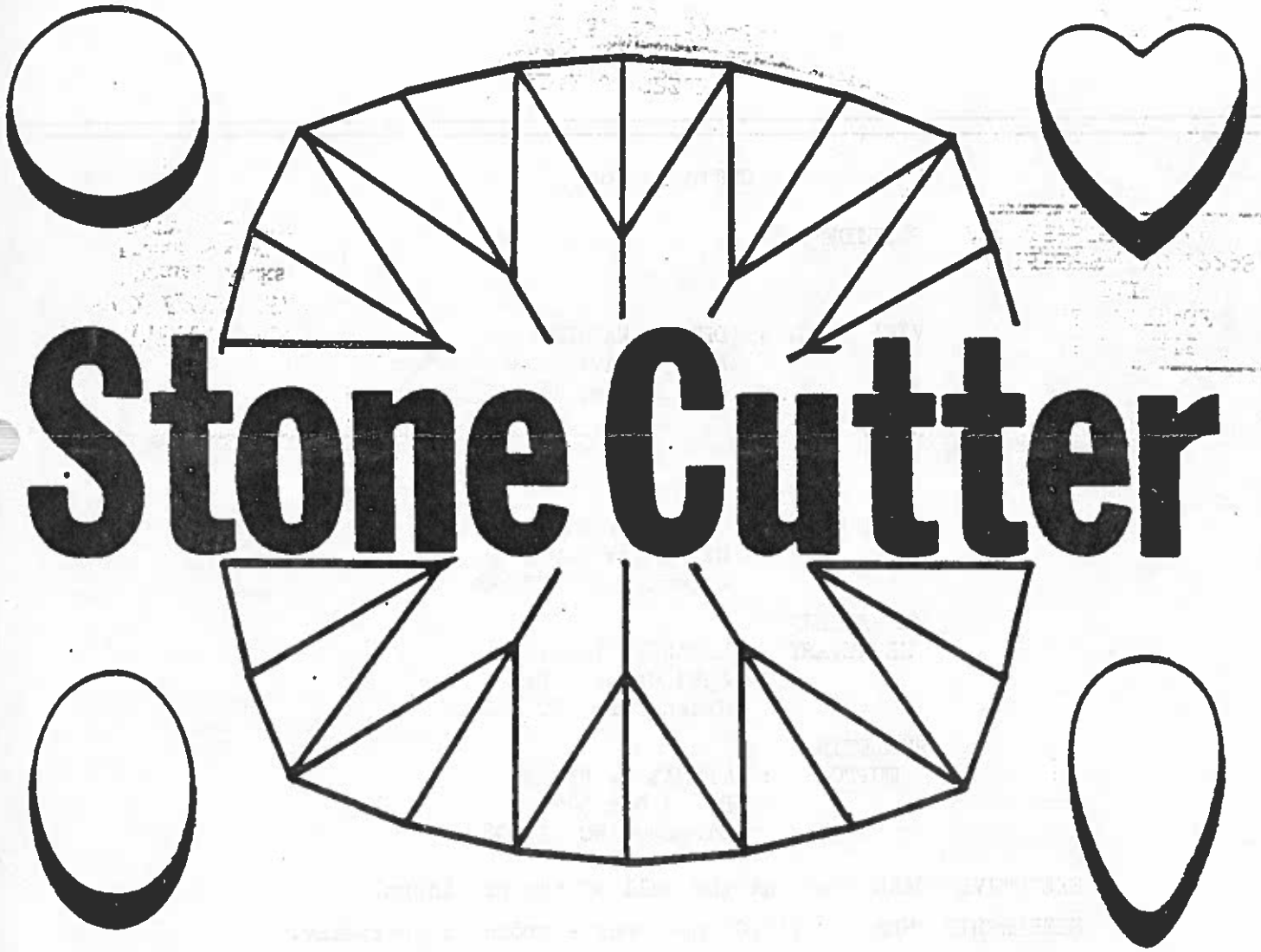
NORTH CAROLINA LAPIDARY SOCIETY

December 1983



Stone Cutter

MEETINGS: SUNDAY
Third ~~Thursday~~ each month.
GEMCRAFTERS
2106 Patterson St.
Greensboro, NC 27407

SOUTHEAST FEDERATION MINERALOGICAL SOCIETIES, INC.

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EXECUTIVE BOARD meets at the call of the president.

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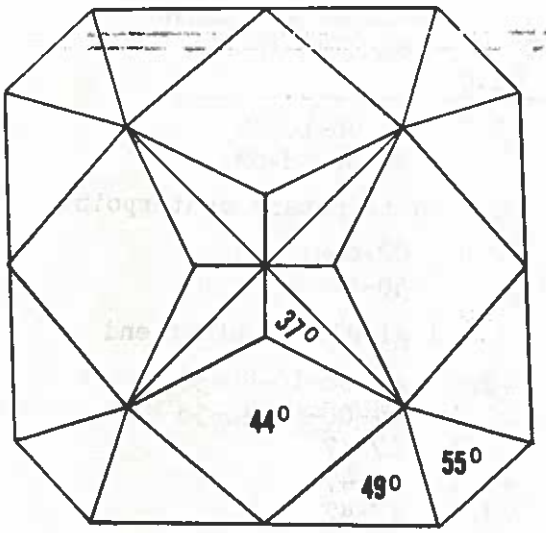
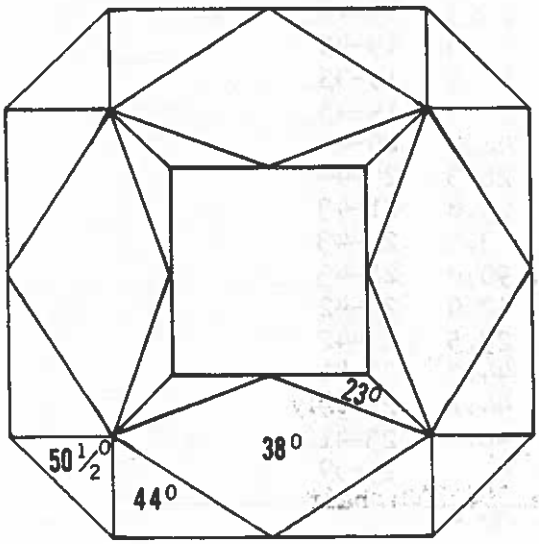
from The Facetier

SQUARE CROSS

DESIGNED BY - LeRoy Galbraith
1310 East 56th • Tacoma, Washington 98404

USE A 96 INDEX GEAR
ANGLES ARE FOR QUARTZ





Material Used: Smoky Quartz • Stone Size: 15 x 15 mm.

I cut pavilion first. When Cutting crown main's leave girdle 1 1/4 mm. thick as it will cut away when girdle facets are cut. Recut corners to provide for mounting stone.

PAVILION

ANGLE	INDEX
44°	96 - 24 - 48 - 72
37°	93 - 3 - 21 - 27 - 45 - 51 - 69 - 75
49°	94 - 2 - 22 - 26 - 46 - 50 - 70 - 74
55°	12 - 36 - 60 - 84

CROWN

ANGLE	INDEX
38°	96 - 24 - 48 - 72
At this point I cut and polish table 50% to 60% of stone.	
23°	94 - 2 - 22 - 26 - 46 - 50 - 70 - 74
44°	94 - 2 - 22 - 26 - 46 - 50 - 70 - 74
50 1/2°	12 - 36 - 60 - 84

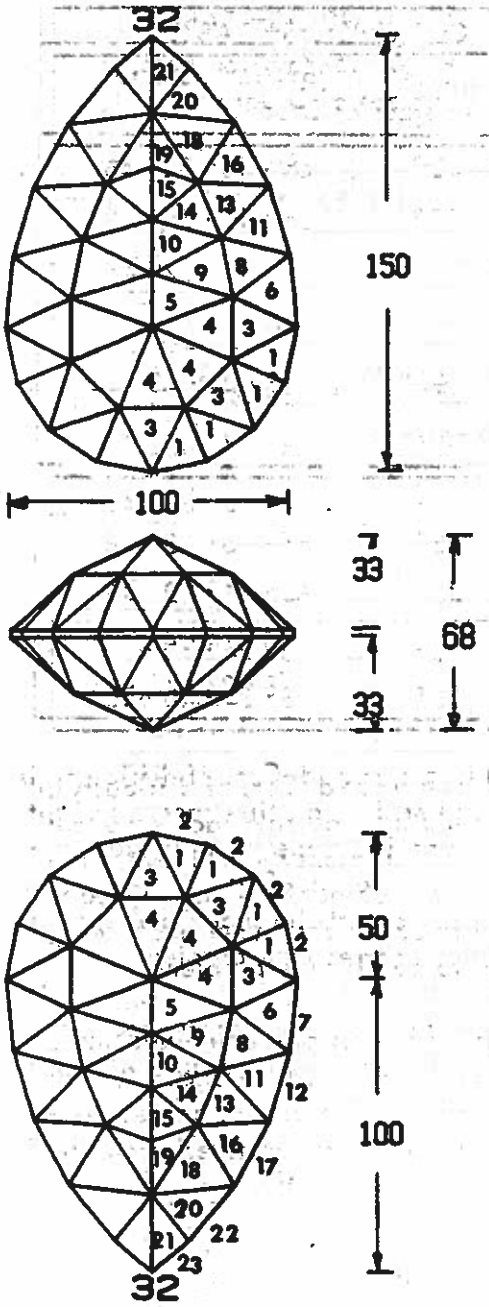
Girdle will be uneven when finished.
Square Stone at 90%.
Index: 96 - 24 - 48 - 72 (MAINS)
12 - 36 - 60 - 84 (CORNERS)

from FACETS, August, 1983

Double Rose Pear by Robert H. Long

Rose cuts are designs entirely made up of triangular facets. A single Rose has one flat (non-triangular, usually) facet in lieu of a pavilion. In a Double Rose, the pavilion is a mirror image of the crown.

This new design in a very old style is relatively shallow. It should be suitable for colored stones which are too intense (such as some garnets) to permit normal depth.



64 INDEX L/W 1.50 114 FACETS

STEP	DESIGN ANGLE 35.0	37.0	42.0	PAVILION and CROWN BEARING INDEX
F1	38.5	40.6	45.7	02-06-10-14 50-54-58-62
				Cut to temporary centerpoint
F2	90.0	90.0	90.0	02-06-10-14 50-54-58-62
				Level girdle at blunt end
F3	35.0	37.0	42.0	64-08-16-48-56
F4	19.9	21.3	25.0	64-08-16-48-56
F5	19.4	20.7	24.3	17-47
F6	36.4	38.4	43.5	17-47
F7	90.0	90.0	90.0	17-47
F8	35.0	37.0	42.0	18-46
F9	20.2	21.6	25.3	18-46
F10	19.8	21.2	24.8	19-45
F11	36.4	38.4	43.5	19-45
F12	90.0	90.0	90.0	19-45
F13	35.0	37.0	42.0	20-44
F14	21.0	22.5	26.3	20-44
F15	20.6	22.0	25.8	21-43
F16	36.4	38.5	43.5	21-43
F17	90.0	90.0	90.0	21-43
F18	35.0	37.0	42.0	22-42
F19	22.9	24.5	28.5	22-42
F20	37.6	39.6	44.7	23-41
F21	37.0	39.1	44.1	25-39
F22	90.0	90.0	90.0	23-41
F23	90.0	90.0	90.0	25-39
Depth	25.6	27.5	32.9	

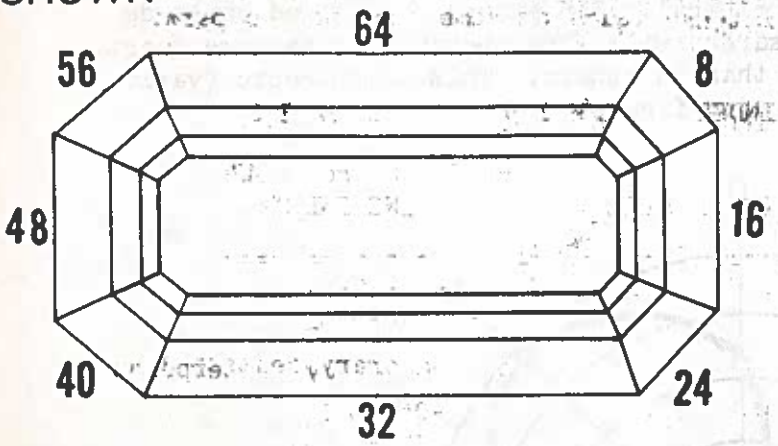
* Seattle Facetor Design, May 1983.

from The FACETIER

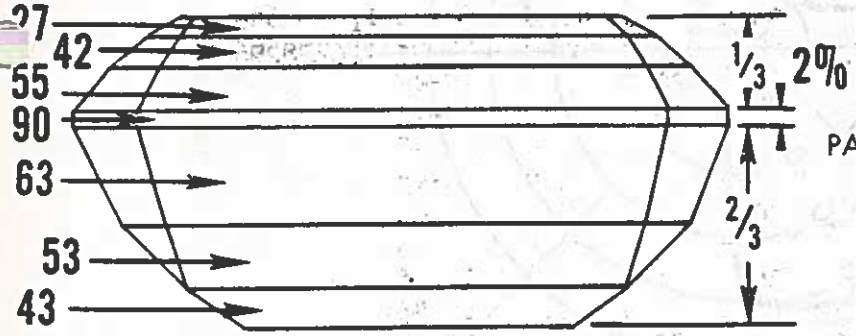
STANDARD EMERALD CUT

USE A 64 INDEX GEAR · ANGLES ARE FOR QUARTZ

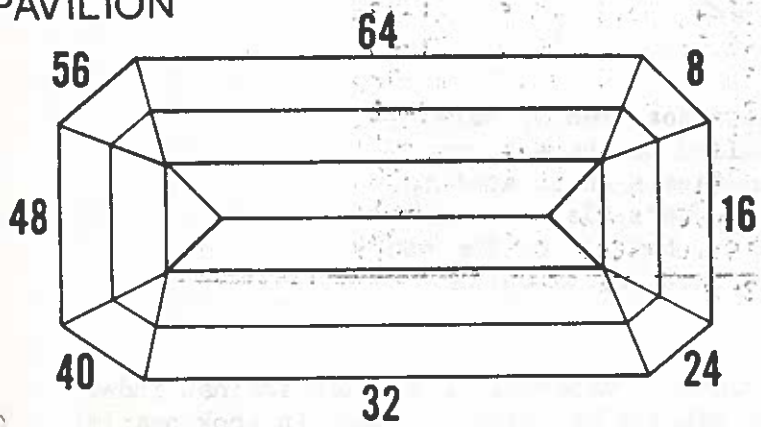
CROWN



SIDE



PAVILION



CUT GIRDLE TO SIZE		
ANGLE		INDEX
90°		64 · 8 · 16 · 24 32 · 40 · 48 · 56
CUT & POLISH TABLE		
On Crown & Pavilion hold to facet sizes of Diagram.		
CROWN	42°	64 · 16 · 32 · 48
	27°	64 · 16 · 32 · 48
	55°	64 · 16 · 32 · 48
Corner Facets	42°	8 · 24 · 40 · 56
	27°	8 · 24 · 40 · 56
	55°	8 · 24 · 40 · 56
PAVILION	63°	64 · 16 · 32 · 48
	53°	64 · 16 · 32 · 48
	43°	64 · 16 · 32 · 48
Corner Facets	63°	8 · 24 · 40 · 56
	53°	8 · 24 · 40 · 56

In this Emerald Cut, if difficulty is encountered in getting facets to cut parallel or polish properly all over, remember to use the Sapphire Radial Compound to adjust the index angle ever so slightly to correct the problem.

To cut a stone of predetermined size, cut the girdle first. Leave about 40% of the top of the stone for the table. Always polish the facets furtherest from the girdle first.

from FACETS, August, 1983

Directional Hardness

by Clifford D. Older
Northridge, Illinois

Among the properties affected by crystal-lattice structure is hardness. This varies not only between minerals such as corundum, apatite and quartz, but also changes with direction within the same mineral. For example, cultured man-made quartz spheres, tumbled and then remeasured, will show uneven wear because quartz is softer in some crystal orientations than in others. This anisotropic (variable) hardness is illustrated in the accompanying figure.

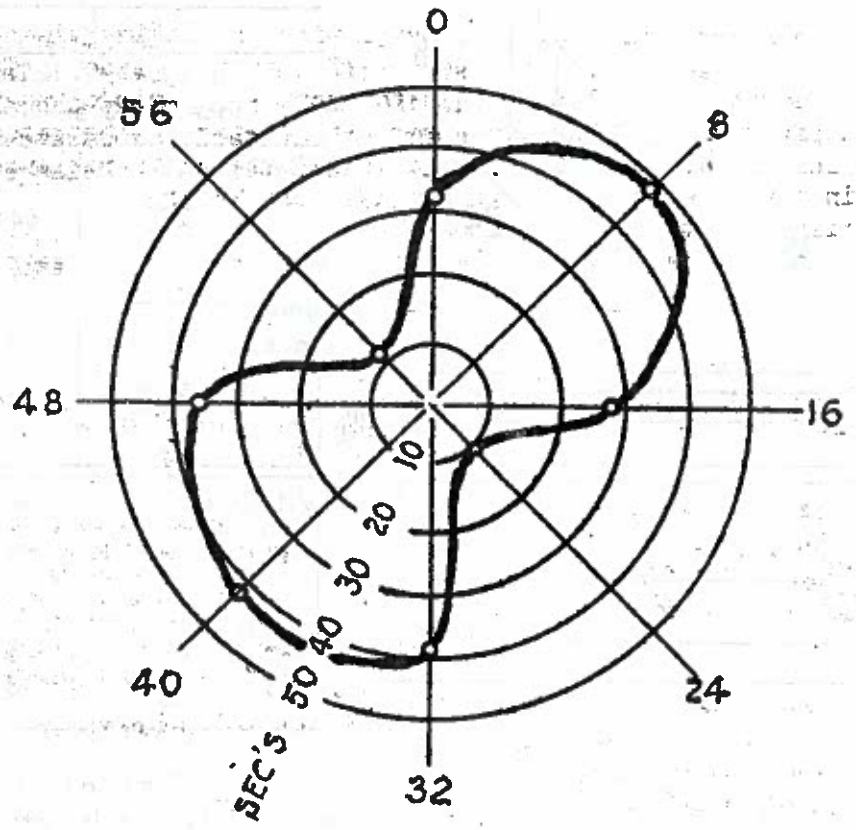


FIGURE 1 -- Anisotropic hardness measured by varying cutting times required to shape a row of uniform-sized main facets on an apatite round brilliant. Numbers placed outside are index positions. Numbers on the concentric circles are cutting times in seconds.

The time required to remove equal amounts of material is plotted against index positions for the main facets of a large calcite brilliant. Thus, it took nearly fifty seconds to cut the facet at index position 8, but only ten seconds at index position 24. Lap speed was constant, and finger pressure on the gem was as uniform as possible. This would indicate that a small star facet at index position 20 would cut very fast indeed---possibly at less than one second. Also to be

noted is the fact that opposite facets exhibit about the same hardness characteristics.

With most faceting materials, differences in directional hardness are less, and lead to no problems. With a few minerals, however, the difference in directional hardness is so striking that cutting at equal times for equal-sized facets is impossible.

Among those minerals requiring unusual care to cut successfully are kyanite, calcite, rhodochrosite and topaz, but most materials need an extra inspection, especially when cutting small facets.

EDITORIAL NOTE: In several minerals, the variation in cutting times for a row of uniform facets can be related to the presence of cleavage planes. The contour of the number 8 of Older's FIGURE 1 parallels the contour of micro-indenter hardness variation in a topaz crystal. Thus an observant faceter demonstrates that abrasive resistance in a mineral can be related to resistance to pressure of a diamond point measured in the scientific laboratory (Wilhelm Meyer).

Older's experience at the faceter's bench with small facets is also a warning against placing too much reliance on electronic depth-gauge indicators.

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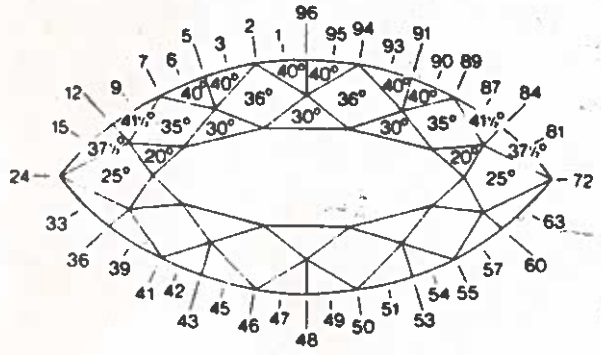
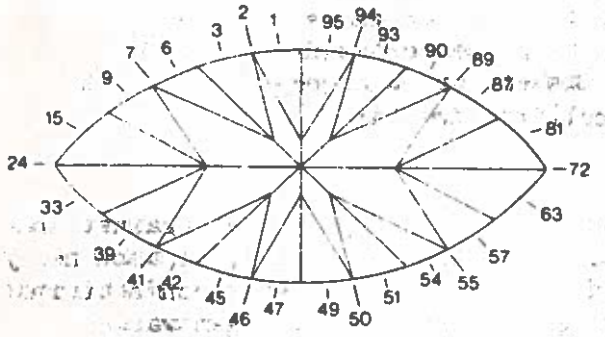


THE SPLIT-FACET MARQUISE—96 INDEX
(Ratio length to width, 2:1)

Crown

1. Cut 4 facets at 36° elevation index 2, 94, 46, and 50.
2. Cut 4 facets at 35° index 7, 89, 41, and 55.
3. Cut 2 ends at 25° index 24 and 72.
4. Cut 6 stars at 30° index 96, 48, 5, 91, 43, and 53.
5. Cut 4 stars at 20° index 12, 84, 36, and 60.
6. Cut 20 crown girdle facets as index locations indicate on drawing. (Elevation angles may vary from those shown.)

Polishing order: from table toward girdle.



Pavilion

1. Cut 4 facets at elevation angle of 41° at middle of pavilion index 2, 94, 46, and 50.
2. Cut 4 facets at 39½° elevation index 7, 89, 41, and 55.
3. Cut 4 facets at 36½° index 9, 87, 39, and 57.
4. Cut 4 facets at 31° index 15, 81, 33, and 63.
5. Cut 4 girdle facets at approximately 42° index 1, 95, 47, and 49.
6. Cut 4 girdle facets at approximately 41° index 3, 93, 45, and 51.
7. Cut 4 girdle facets at 39° elevation index at 6, 90, 42, and 54.

Polishing order: from culet toward girdle.
(Polish girdle on wood lap)

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